

U.S. Application 09/845,856
Amdt. Dated August 16, 2004
Reply to Office Action of June 17, 2004

Amendments To The Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing Of Claims:

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Claim 1 (currently amended): A process for producing a monoalkylaromatic compound comprising the step of contacting an alkylatable alkylaromatic compound with an alkylating agent under alkylation conditions such as to maintain the alkylatable aromatic compound substantially in the liquid phase and in the presence of an alkylation catalyst comprising phosphorus and a porous crystalline inorganic oxide material having an X-ray diffraction pattern including the d-spacing maxima at 12.4 ± 0.25 , 6.9 ± 0.15 , 3.57 ± 0.07 and 3.42 ± 0.07 Angstrom, said conditions being sufficient to produce said monoalkylaromatic compound.

Claims 2-10 (canceled)

Claim 11 (previously presented): The process of claim 1, wherein the porous crystalline inorganic oxide material is selected from the group consisting of MCM-22, PSH-3, SSZ-25, MCM-36, MCM-49 and MCM-56.

Claim 12 (previously presented): The process of claim 1, wherein the alkylation catalyst contains between about 0.05 and about 10 wt.% phosphorus, as measured on an elemental basis, based on the weight of the final catalyst.

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Claim 13 (previously presented): The process of claim 1, wherein the alkylation catalyst contains between about 0.1 and about 2 wt.% phosphorus, as measured on an elemental basis, based on the weight of the final catalyst.

Claim 14 (previously presented): The process of claim 1, wherein the alkylation catalyst contains between about 0.1 and about 0.5 wt % phosphorus, as measured on an elemental basis, based on the weight of the final catalyst.

Claim 15 (previously presented): The process of claim 1, wherein the alkylating agent includes an aliphatic group having 1 to 5 carbon atoms.

Claim 16 (previously presented): The process of claim 1, wherein the aromatic hydrocarbon is benzene and the alkylating agent is selected from ethylene and propylene.

Claim 17 (previously presented): The process of claim 1, wherein the aromatic hydrocarbon is benzene, the alkylating agent is ethylene and the alkylation catalyst includes phosphorus and MCM-22.

Claim 18 (currently amended): The process of claim 1, wherein the aromatic hydrocarbon is benzene, the alkylating agent is propylene and the alkylation catalyst includes phosphorus and MCM-49 or MCM-56.

Claim 19 (currently amended): The process of claim ~~1~~17, wherein the alkylation conditions comprise a temperature less than 500°C of about 150 to about 316°C, a pressure up to 20,875 kPa, a weight hourly space velocity, based on the ethylene feed, of about 0.1 to about 20 hr⁻¹ and molar ratio of benzene to ethylene of about 1:1 to about 30:1.

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Claim 20 (currently amended): The process of claim ~~1~~18, wherein the alkylation conditions comprise a temperature less than 250°C, a pressure up to 250 atmospheres, and a benzene weight hourly space velocity of about 5 to about 250 hr⁻¹.

Claim 21 (new): The process of claim 1, wherein the aromatic hydrocarbon is benzene, the alkylating agent is propylene and the alkylation catalyst includes phosphorus and MCM-56.

Claim 22 (new): The process of claim 21, wherein the alkylation conditions comprise a temperature less than 250°C, a pressure up to 250 atmospheres, and a benzene weight hourly space velocity of about 5 to about 250 hr⁻¹.

Claim 23 (new): A process for producing a monoalkylaromatic compound comprising the step of reacting an alkylatable alkylaromatic compound with an alkylating agent under alkylation conditions such as to maintain the alkylatable aromatic compound substantially in the liquid phase and in the presence of an alkylation catalyst comprising phosphorus and a porous crystalline inorganic oxide material having an X-ray diffraction pattern including the d-spacing maxima at 12.4±0.25, 6.9±0.15, 3.57±0.07 and 3.42±0.07 Angstrom, said conditions being sufficient to produce said monoalkylaromatic compound and said alkylation catalyst having a higher activity for the reaction between said alkylatable alkylaromatic compound and said alkylating agent under said conditions than an identical catalyst but without said phosphorus.

Claim 24 (new): A process for producing a monoalkylaromatic compound comprising the step of contacting an alkylatable alkylaromatic compound with an alkylating agent under alkylation conditions such as to maintain the alkylatable aromatic compound substantially in the liquid phase and in the presence of an alkylation catalyst comprising phosphorus and a porous crystalline inorganic oxide material having an X-ray diffraction pattern including the d-spacing maxima at 12.4±0.25, 6.9±0.15, 3.57±0.07 and 3.42±0.07

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Angstrom, said conditions being sufficient to produce said monoalkylaromatic compound and said alkylation catalyst having a higher selectivity towards said monoalkylaromatic compound under said conditions than an identical catalyst but without said phosphorus.